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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/700,611	02/05/2001	Hideo Sato	9812.0686-00000	7664

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EXAMINER	
ARMSTRONG, ANGELA A	
ART UNIT	**PAPER NUMBER**
2626	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/04/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/700,611	SATO, HIDEO	
	Examiner	Art Unit	
	Angela A. Armstrong	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-50,52-60 and 62-69* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-50,52-60 and 62-69* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 23, 2006, has been entered.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., In re Berg, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-50, 52-60, and 62-69 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-26 of U.S. Patent No. 6,359,849 (to Sato et al) in view of Tewfik (US Patent No. 6,061,793).

US Patent No. 6,359,849 claims signal processing processes providing for orthogonal transforming means for implementing orthogonal transform processing on an input signal to generate coefficient data; embedding input data in the coefficient data and; wherein said embedded data is embedded in said input signal by setting a predetermined bit of predetermined coefficient data to a logical value corresponding to data to be embedded. While the US Patent to Sato claims the transforming and embedding processes, the claims do not provide the specific details of the embedding process to specifically claim damping and shifting a predetermined number of orthogonal transform coefficients selected from the plurality of orthogonal transform coefficients by damping the predetermined number of orthogonal transform coefficients by a predetermined amount and shifting the predetermined number of orthogonal coefficients by a predetermined number of units in the direction of the frequency axis and adding the damped and shifted orthogonal transform coefficients to the original orthogonal transform coefficients to form an output audio signal, the added damped and shifted orthogonal coefficients comprising the embedded additional information.

Tewfik teaches damping and shifting a predetermined number of orthogonal transform coefficients selected from the plurality of orthogonal transform coefficients by damping the predetermined number of orthogonal transform coefficients (the PN sequence of a maximum length) by a predetermined amount (masking filter, since the PN sequence is filtered with masking filter) and shifting the predetermined number of orthogonal coefficients by a

predetermined number of units (the scale factor) in the direction of the frequency axis (based on the frequency masking) and adding the damped and shifted orthogonal transform coefficients to the original orthogonal transform coefficients to form an output audio signal, the added damped and shifted orthogonal coefficients comprising the embedded additional information; and adding the output audio signal having the embedded additional information (col. 8, line 21 to col. 9, line 47).

It would have been obvious to one of ordinary skill to scale and generate the watermark or additional embedding information as taught by Tewfik, so as to provide for a shift and addition step of damping and shifting the coefficients so as to ensure the watermark or additional embedded information remains inaudible, as suggested by Tewfik.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-50, 52-60, and 62-69 are rejected under 35 U.S.C. 102(e) as being anticipated by Tewfik (US Patent No. 6,061,793).

4. Regarding claim 1, Tewfik teaches an additional information embedding method for embedding additional information into an audio signal (col. 3, lines 18-22), the method

comprising: orthogonally transforming the input audio signal to generate a plurality of orthogonal transform coefficient (col. 6, lines 42-57). Tewfik teaches damping and shifting a predetermined number of orthogonal transform coefficients selected from the plurality of orthogonal transform coefficients by damping the predetermined number of orthogonal transform coefficients (the PN sequence of a maximum length) by a predetermined amount (masking filter, since the PN sequence is filtered with masking filter) and shifting the predetermined number of orthogonal coefficients by a predetermined number of units (the scale factor) in the direction of the frequency axis (based on the frequency masking) and adding the damped and shifted orthogonal transform coefficients to the original orthogonal transform coefficients to form an output audio signal, the added damped and shifted orthogonal coefficients comprising the embedded additional information; and adding the output audio signal having the embedded additional information (col. 8, line 21 to col. 9, line 47).

Regarding claim 2, Tewfik teaches orthogonally transforming the input audio signal includes carrying out MDCT of the audio signal so as to calculate an MDCT coefficient, and wherein damping and shifting the predetermined number of orthogonal transform coefficients includes damping and shifting the calculated MDCT coefficient in the direction of the frequency axis and adding the additional information to the original MDCT coefficient so as to embed the additional information (col. 6, line 42 to col. 8, line 67).

Regarding claim 3, Tewfik teaches damping and shifting the predetermined number of orthogonal transform coefficients includes adding the orthogonal transform coefficient shifted on the frequency axis to the original orthogonal transform coefficient so that a frequency masked condition and a temporal masking condition are met (col. 3, line 58 to col. 8, line 67).

Regarding claim 4, Tewfik et al teaches damping and shifting the predetermined number of orthogonal transform coefficients includes carrying out the addition when the value obtained by adding the shifted orthogonal transform coefficient to the value of the original orthogonal transform coefficient is not higher than a predetermined value (col. 3, line 58 to col. 8, line 67).

Regarding claim 5, Tewfik teaches damping and shifting the predetermined number of orthogonal transform coefficients includes prohibiting the shift and addition in accordance with the polarity of the value obtained by adding the shifted orthogonal transform coefficient to the value of the original orthogonal transform coefficient (col. 3, line 58 to col. 8, line 67).

Regarding claim 6, Tewfik teaches damping and shifting the predetermined number of orthogonal transform coefficients includes carrying out the shift and addition when the audio signal falls within a range from an upper limit value to a lower limit value (col. 3, line 58 to col. 8, line 67).

Regarding claim 7, Tewfik teaches damping and shifting the predetermined number of orthogonal transform coefficients carrying out the shift and addition when the audio signal falls within a range from an upper limit value to a lower limit value set on the basis of the human auditory characteristics (col. 3, line 58 to col. 8, line 67).

Regarding claim 8, Tewfik teaches damping and shifting the predetermined number of orthogonal transform coefficients includes carrying out the shift and addition of the orthogonal transform coefficient within a predetermined Frequency band (col. 3, line 58 to col. 8, line 67).

Regarding claim 9, Tewfik teaches damping and shifting the predetermined number of orthogonal transform coefficients includes carrying out the shift and addition of the MDCT coefficient within a predetermined frequency band (col. 3, line 58 to col. 8, line 67).

Regarding claim 10, Tewfik teaches damping and shifting the predetermined number of orthogonal transform coefficients includes dividing the frequency band of the audio signal and carrying out shift and addition for each of the divided frequency bands (col. 3, line 58 to col. 8, line 67).

Regarding claim 11, Tewfik teaches damping and shifting the predetermined number of orthogonal transform coefficients includes reversing the shifting direction of the divided adjacent frequency bands (col. 3, line 58 to col. 8, line 67).

Regarding claim 12, Tewfik teaches scrambling the signal calculated by the shift and addition step, using a pseudo-random signal (col. 3, line 58 to col. 8, line 67).

Regarding claim 13, Tewfik teaches damping and shifting the predetermined number of orthogonal transform coefficients includes shifting the MDCT coefficient toward the frequency-increasing side and adding the MDCT coefficient to the original MDCT coefficient (col. 3, line 58 to col. 8, line 67).

Regarding claim 14, Tewfik teaches damping and shifting the predetermined number of orthogonal transform coefficients includes increasing the frequency of the MDCT coefficient is increased by (sampling frequency/number of samples of MDCT coefficient) x 2N) Hz, as the MDCT coefficient is shifted by 2N units (where N is a natural number) (col. 3, lines 40-56).

Regarding claim 15, Tewfik teaches the amplitude of the coefficients substantially equal to the amplitude of the audio signal (col. 5, lines 53-62).

Regarding claim 16, Tewfik teaches damping and shifting the predetermined number of orthogonal transform coefficients includes shifting the MDCT coefficient toward the frequency-

decreasing side and adding the MDCT coefficient to the original MDCT coefficient (col. 3, line 58 to col. 8, line 67).

Regarding claim 17, Tewfik teaches damping and shifting the predetermined number of orthogonal transform coefficients the frequency of the MDCT coefficient is decreased by (sampling frequency/number of samples of MDCT coefficient) x 2N) Hz, as the MDCT coefficient is shifted by 2N limits (where N is a natural number) (col. 3, lines 40-56).

Regarding claim 18, Tewfik teaches the amplitude of the coefficients is substantially equal to the amplitude of the audio signal (col. 5, line 53 to col. 6, line 2).

Regarding claim 19, Tewfik teaches damping and shifting the predetermined number of orthogonal transform coefficients includes shifting the MDCT coefficient by 2N units (where N is a natural number) (col. 3, lines 40-56).

Regarding claim 20, Tewfik teaches damping and shifting the predetermined number of orthogonal transform coefficients includes shifting the MDCT coefficient by 2N-1 units (where N is a natural number) (col. 3, lines 40-56).

Regarding claim 21, Tewfik teaches damping and shifting the predetermined number of orthogonal transform coefficients includes adding the shifted MDCT coefficient within a critical band of a Frequency masking area of the MDCT coefficient of the original audio signal (col. 3, line 58 to col. 8, line 67).

Regarding claim 22, Tewfik teaches the additional information is limitation information for prohibiting transfer of the audio signal (col. 9, line 61 to col. 10, line 11).

Regarding claim 23, Tewfik teaches the additional information is limitation information for prohibiting recording of the audio signal to a recording medium (col. 9, line 61 to col. 10, line 11).

Regarding claim 24, Tewfik teaches the additional information is work data corresponding to the audio signal (col. 9, line 61 to col. 10, line 11).

5. Regarding claim 50, Tewfik teaches a demodulation method for receiving an audio signal in which additional information is embedded and demodulating the additional information (col. 7, line 30 to col. 8, line 3), receiving an audio signal in which additional information is embedded and a demodulation step of demodulating the additional information on the basis of the polarity of the audio signal at each predetermined interval on the frequency axis, of the received signal (col. 7, line 30 to col. 8, line 3). Tewfik teaches damping and shifting a predetermined number of orthogonal transform coefficients selected from the plurality of orthogonal transform coefficients by damping the predetermined number of orthogonal transform coefficients (the PN sequence of a maximum length) by a predetermined amount (masking filter, since the PN sequence is filtered with masking filter) and shifting the predetermined number of orthogonal coefficients by a predetermined number of units (the scale factor) in the direction of the frequency axis (based on the frequency masking) and adding the damped and shifted orthogonal transform coefficients to the original orthogonal transform coefficients to form an output audio signal, the added damped and shifted orthogonal coefficients comprising the embedded additional information; and adding the output audio signal having the embedded additional information (col. 8, line 21 to col. 9, line 47).

6. Regarding claims 25-49, claims 25-49 are apparatus claims similar in scope and content to the method claims of 1-24 and are therefore rejected under similar rationale.

7. Regarding claims 52-60 and 62-69, claims are demodulation method and apparatus claims similar in scope and content to the information embedding method claims of 1-24, and are therefore rejected under similar rationale.

Response to Arguments

8. Applicant's arguments filed October 23, 2006, have been fully considered but they are not persuasive. Applicant argues Tewfik fails to disclose damping and shifting a predetermined number of orthogonal transform coefficients selected from the plurality of orthogonal transform coefficients by damping the predetermined number of orthogonal transform coefficients by a predetermined amount and shifting the predetermined number of orthogonal coefficients by a predetermined number of units in the direction of the frequency axis and adding the damped and shifted orthogonal transform coefficients to the original orthogonal transform coefficients to form an output audio signal, the added damped and shifted orthogonal coefficients comprising the embedded additional information.

The Examiner cannot concur. Tewfik teaches damping and shifting a predetermined number of orthogonal transform coefficients selected from the plurality of orthogonal transform

coefficients by damping the predetermined number of orthogonal transform coefficients (the PN sequence of a maximum length) by a predetermined amount (as the masking filter, since the PN sequence is filtered with the masking filter) and shifting the predetermined number of orthogonal coefficients by a predetermined number of units (the scale factor) in the direction of the frequency axis (based on the frequency masking) and adding the damped and shifted orthogonal transform coefficients to the original orthogonal transform coefficients to form an output audio signal, the added damped and shifted orthogonal coefficients comprising the embedded additional information; and adding the output audio signal having the embedded additional information.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela A. Armstrong whose telephone number is 571-272-7598. The examiner can normally be reached on Monday-Thursday 11:30-8:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on 571-272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Angela A Armstrong
Primary Examiner
Art Unit 2626

AAA
December 27, 2006